REMARKS

In view of the remarks set forth below, Applicant respectfully requests the prompt re-examination and allowance of this application.

Discussion with Examiner

Applicant would like to thank Examiner Garbowski for the courtesy extended during the telephonic discussion of May 18, 2007 between Examiner Garbowski and James Stein. During the discussion it was decided personal interview regarding the outstanding Office Action was not necessary at this time.

Section 102 rejections

In the Office Action, claims 1-28 were rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 5,293,479 to Quintero et al. ("Quintero"). Claims 1, 3-10, and 12-28 were rejected under 35 U.S.C. § 102(e) as anticipated by U.S. Patent No. 6,438,435 to Wada et al. ("Wada"). Claims 1, 4-10, 13-23, and 26-28 were rejected under 35 U.S.C. § 102(e) as anticipated by U.S. Patent No. 6,547,165 to Ishikawa et al. ("Ishikawa"). Applicant respectfully traverses these rejections. The anticipation rejections set forth in the outstanding Office Action do not establish that each and every claimed element is disclosed in Quintero, Wada, and Ishikawa.

Quintero discloses a design tool "for use in designing a connected collection of components which are available or can be made in different forms." Quintero, Abstract. The tool is useful in designing assemblies of modular furniture, wire harness assemblies, propellers, bolts, and other fasteners. Id., col. 1, ll. 14-17. The design tool consists of a knowledge base, a rule base, an inference engine, an expert user

interface, and a graphic system that interrelate to allow creation of a particular furniture system. Id., col. 7, ll. 3-10. The knowledge base is a set of databases containing information about components used in the design, such as connection vectors (i.e., connection points on the components), graphical information (e.g., drawings), assembly instructions, and availability. Id., col. 7, ll. 17-30.

The rule base contains information to allow proper combinations of components and disallow improper combinations of components during the design process. Specifically, the rule base contains rules as to which components can be combined, and under what conditions such combinations may be made; and which components must be present under certain conditions. Id., col. 7, ll. 48-43.

The inference engine selects and applies rules from the rule base using information from the knowledge base to direct and implement the design process. Id., col. 8, ll. 37-39. During the design process, the inference engine accepts input including user choices through menu selection and input based on application of rules. Id., col. 8, ll. 43-46. Further, the inference engine applies a design rule check (DRC) against the design when a design is saved to detect any errors in design. Id., col. 8, ll. 47-50. The three possible outcomes of a design rule check include a clean pass (i.e., rules are satisfied), a warning (i.e., design includes a flaw but it is still "constructable"), and a failure. If a failure results, the an appropriate message as to the failure and a probable cause thereof is outputted to the user. Id., col. 29, ll. 45-58.

The expert interface is responsive to user commands to affect creation of a design. Id., col. 8, ll. 65-67. Specifically, the expert user interface only allows the user to select viable menu selections during the design process and outputs messages as a

result of the design rule check. Id., col. 9, ll. 9-12. Creation of the design is displayed via the graphics system. Id., col. 9, ll. 38-40.

Wada discloses a tool for generating diagrams for manufacturing wiring harnesses. Wada, Abstract. First, an operator inputs a wiring arrangement diagram by way of a mouse and a keyboard, which is subsequently provided in a work window 32 of display 6. Id., col. 7, ll. 13-19. Specifically, the basic entities required to make the wiring harness are "dragged" into work window 32, labeled with identifiers (e.g., "connector 1"), and interconnected as desired by the operator. Id., col. 7, ll. 28 - col. 8, l. 4. The basic entities an include electric cables forming the wiring, a connector, binding belt, a connection, and terminals. Id., col. 7, ll. 22-27. The operator then inputs lengths for each of the electric cables (wires) and graphically positions the arrangement on the display screen. Id., col. 8, ll. 5-18. The operator then inputs properties of the connectors and/or connections therebetween, including a name, a terminal being connected, a color, and a type of cable. Id., col. 8, ll. 14-61. Subsequently, the operator can generate the wiring harness diagram by clicking icon 66 or 68. Id., col. 9, ll. 1-14. At this point, the system generates a wiring length table (see., e.g., Figs. 10A-10D) having an entry including wiring lengths between each interconnected connector. Id., col. 9, 15 - col. 11, l. 53.

After completion of the wiring length table, the system carries out a judgment as to whether the connections of the independent wiring harness comply with a predetermined rule (e.g., manufacturing restrictions). Id., col. 11, ll. 54-65. If the harness is not in compliance with the rule, the system indicates an error to the operator by way of display 6. Id., col. 11, ll. 65-66. Subsequently, the system generates an

independent wiring harness diagram, based on the wiring length table and the operator-entered properties of the connectors and/or connections, which is outputted to printer 14. Id., col. 12, ll. 4-23.

Ishikawa discloses an apparatus for designing a wiring harness of a vehicle. Ishikawa, col. 1, ll. 7-9. A user inputs wiring information, including information about auxiliary units to be connected to the wiring harness; terminal information about the auxiliary units; wire information attributes, such as wire type, wire diameter and color; and a set of drawing-passing coordinates. Id., col. 6, ll. 38-54. The user also inputs route information about the wiring harness route, including passing point information on points through which the wiring harness passes; route drawing information; wire length information; and coordinates of a starting point and an ending point of a route. Id., col. 6, l. 55 - col. 7, l. 2. The system subsequently displays on a screen a route drawing based on the route information. Id., col. 7, ll. 15-18. The system then displays the auxiliary units on the route drawing in appropriate locations by linking the wiring information and the route information. Id., col. 7, ll. 18-32. Subsequently, the user may select with a mouse a particular route displayed in the drawing, and the system displays information about the wire passing through the selected route in response to the selection. Id., col. 7, ll. 42-61. For example, in response to the user's selection of the route "P2" shown in Fig. 14, the system will display wiring information about the "P2" route, such as the number of wires passing through "P2" and the diameter of the harness in this area. Id., col. 11, l. 51 - col. 12, l. 6.

With respect to independent claim 1, Quintero, Wada, and Ishikawa fail to disclose or suggest, among other things, "[a] method of designing a routing element,

wherein the routing element connects a plurality of components in a system, the method comprising: . . . establishing guidelines for designing the routing element, the guidelines including recommendations for designing the routing element; and designing the routing element based on the diagram and the guidelines." As discussed above, Quintero discloses a tool useful in designing modular furniture. Although Quintero briefly mentions that the tool could be used to design wire harness assemblies, Quintero fails to show or describe this in any detail. Specifically, Quintero fails to disclose how the tool could be used to design a "routing element [that] connects a plurality of components in the system." In fact, the figures of Quintero do not show a "routing element" of any sort, but rather a plurality of modular components that are mated together to form a design assembly. See, e.g., Figs. 1A-1D, 3, 4, 7, and 13-29. That is, there is no common element routed to connect the components. Thus, Quintero is not directed to the design of a "routing element [that] connects a plurality of components in a system," as required by claim 1.

Even if Quintero were directed to the design of such a "routing element," which Applicant denies, Quintero does not disclose nor suggest "establishing guidelines for designing the routing element, the guidelines including recommendations for designing the routing element; and designing the routing element based on the diagram and the guidelines," as required by claim 1. As discussed above, Quintero discloses applying a design rule check against the design, which was noted by the Examiner. Office Action at 2. However, determining if a particular design violates a rule is different than "establishing guidelines for designing the routing element, the guidelines including recommendations for designing the routing element; and designing the routing element

based on the diagram and the guidelines." Quintero does not teach that the results of the design rule check are incorporated into the design as guidelines, nor that any design recommendations are made based on the design rule check.

As discussed above, the tool of Wada requires the operator to input properties of connectors and/or connections, such as a name, a terminal being connected, a color, a type of cable, and a wiring length. Entering predetermined, fixed properties to which the harness design must *adhere*, however, is different than "establishing guidelines for designing the routing element, the guidelines including recommendations for designing the routing element; and designing the routing element based on the diagram and the guidelines," as required by claim 1. In other words, Wada does not teach that design of the wiring harness is carried out *based on these properties.* Further, although Wada teaches that a judgment is carried out upon completion of the design as to whether the connections in the wiring harness comply with a predetermined rule, Wada does not teach that this judgment is incorporated into the design as guidelines, nor that recommendations are made based on the judgment.

Similarly, the system of Ishikawa requires the user to manually input information to design the wiring harness. As mentioned above, a user inputs information on auxiliary units to be connected to the wiring harness; terminal information about the auxiliary units; wire information attributes, such as wire type, wire diameter, and color; a set of drawing-passing coordinates. The user also inputs information about the wiring harness route, including passing point information on points through which the wiring harness passes; route drawing information; wire length information; and coordinates of a starting point and an ending point of a route. Entering such fixed parameters to which

the harness design must *adhere*, however, is different than "establishing guidelines for designing the routing element, the guidelines including recommendations for designing the routing element; and designing the routing element based on the diagram and the guidelines," as required by claim 1. As mentioned above, these parameters are simply used by the system to determine and display wiring information about a user-selected route within the harness (e.g., route "P2"), such as a diameter of the harness in the selected route. These parameters are not used to "[establish] guidelines for designing the routing element, the guidelines including recommendations for designing the routing element," wherein the routing element is designed "based on the diagram and the guidelines," as required by claim 1. In other words, Ishikawa does not teach that the design of the wiring harness is carried out *based on these parameters.*

Because Quintero, Wada, and Ishikawa neither disclose nor suggest each and every limitation recited in claim 1, they cannot anticipate the claim. Therefore, Applicant requests the withdrawal of the § 102 rejections and the timely allowance of this claim. Further, since claims 2-9 depend directly or indirectly from claim 1, Applicant also respectfully requests the withdrawal of the § 102 rejection and the timely allowance of these claims.

Independent claims 10, 19, 22, and 27, although slightly different in scope, recite limitations similar to those of claim 1. For example, claim 10 recites, among other things, "[a] computer-readable medium including instructions for performing a method . . . the method comprising the steps of: . . . accessing guidelines for designing the structure, the guidelines including recommendations for routing the elements in the structure for the plurality of elements based on the diagram and the guidelines."

Therefore, for at least the same reasons as discussed above in connection with claim 1, Applicant respectfully requests the withdrawal of the § 102 rejection and the timely allowance of this claim. Since claims 11-18 depend directly or indirectly from claim 10, Applicant respectfully requests the withdrawal of the § 102 rejection and the timely allowance of these claims.

Similarly, claim 19 recites, among other things, "[a] tool for designing a routing element [that] connects a plurality of components in a system via connecting elements ...comprising: ... a design module that, when executed by the processor, designs the routing element base on one or more guidelines, the guidelines including at least one recommendation for routing the connecting elements in the system, and automatically determines routing patterns in the system for the element based on the diagram and the guidelines." Because Quintero, Wada, and Ishikiawa fail to disclose the subject matter of claim 1, they also cannot disclose the subject matter of claim 19; particularly "*automatically* determin[ing] routing patterns in the system for the element based on the diagram and the guidelines." In fact, Quintero, Wada, and Ishikiawa teach that the user must manually define the routing pattern using the respective tool, as discussed above. For this additional reason, Applicant respectfully requests the withdrawal of the § 102 rejections and the timely allowance of this claim. Since claim 20 depends claim 19, Applicant respectfully requests the withdrawal of the § 102 rejection and the timely allowance of this claim.

Independent claim 21 recites, among other things, "[a] tool for designing a routing element [that] connects a plurality of components in a system . . . comprising: . . . establishing guidelines for designing the routing element, the guidelines including at

least one recommendation for designing the routing element; and designing the routing element based on the diagram and the guidelines." Therefore, for at least the same reasons as discussed above in connection with claim 1, Applicant respectfully requests the withdrawal of the § 102 rejection and the timely allowance of this claim.

Independent claim 22 recites, among other things, "[a] method of routing an element among a plurality of components in a system ... comprising: . . . establishing routing guidelines including at least one recommendation for routing the element in the system; and *automatically* determining a routing of the element to connect the plurality of components based on the routing guidelines." Therefore, for at least the same reasons as discussed above in connection with claims 1 and 19, Applicant respectfully requests the withdrawal of the § 102 rejection and the timely allowance of this claim.

Independent claim 27 recites "[a] method for designing a routing element that connects a plurality of elements in a system . . . comprising: . . . establishing guidelines for designing the routing element, the guidelines including information reflecting a geometry of the system; and designing the routing element based on the diagram and the guidelines." As discussed above, Wada and Ishikiawa teach that the user can enter geometrical properties of wires in the wiring harness, such as length and diameter. The knowledge base of Quintero contains similar information. However, these geometrical properties are predetermined, fixed values which the user can enter and to which the design must *adhere*. That is, the designing of the wiring harness is not carried out *based on* these properties. Therefore, neither Quintero, nor Wada, nor Ishikiawa teach "establishing guidelines" on which the design of the routing element is based, as required by claim 27. In addition to the reasons discussed above in

connection with claim 1, Applicant respectfully requests the withdrawal of the § 102 rejection and the timely allowance of claim 27 for these additional reasons. Since claim 28 depends from claim 27, Applicant also respectfully requests the withdrawal of the § 102 rejection and the timely allowance of this claim.

Conclusion

In view of the foregoing remarks, Applicant respectfully requests prompt reconsideration of the application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our Deposit Account 06-0916.

Respectfully submitted,

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